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ABSTRACT

At the College of Saint Theresa (Minnesota), the efficacy of preparing qualified teachers in four years is supported through three years of activities in conjunction with a Dean's Grant Project. Project PRISE (Preparing Regulars in Special Education) is based on two themes: (1) Teacher education graduates should be able to use reasoning skills to solve the academic and social problems of mildly handicapped students; and (2) Teacher education faculty must work together and depend upon each other for optimal preparation of the students. Three sets of factors influencing the direction of Project PRISE are the project's experiences, an educator's previous work experience and bias, and empirical findings. A review of these three factors illustrate the importance of: (1) knowledge of course content or subject area; (2) knowledge of teacher education content; (3) use of reasoning or process skills; and (4) inter-college and intra-college cooperation of teacher education faculty. (CJ)

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Teaching Reasoning: The Essential Element
in Teacher Preparation for Mainstreaming Education

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Abstract

Three years of Dean's Grant activity at the College of Saint Teresa is described. The paper focuses on two major themes. One, the importance of insuring teacher education graduates can utilize reasoning skills in solving academic/social problems of the mildly handicapped learner is discussed. Two, the necessity of teacher education faculty interdependence for optimal preparation of students is suggested. A rationale for the College of Saint Teresa approach is offered and the implications for teacher training are considered.

Teaching Reasoning: The Essential Element
in Teacher Preparation for Mainstreaming Education

One of the most serious concerns facing those college of education faculty who strive to contribute to the successful implementation of Public Law 94-142 is how to reconceptualize and restructure their teacher education programs to best promote the skills teachers need to meet the new demands this legislation places on them. Many teacher education programs have responded to this challenge by adding special education content to their programs through new courses. In some of these programs the extent of these curriculum additions has led to a serious consideration of extended (five year) teacher education programs.

At the College of Saint Teresa, the efficacy of preparing qualified teachers in four years is still supported as a result of three years of effort in an Office of Special Education/Division of Personnel Preparation Dean's Grant (Project PRISE - Preparing Regulars in Special Education). Central to the college's approach is the credence placed on the direct application of thinking processes by any teacher (regular or special education) in meeting the needs of the mildly handicapped child. The thinking processes are defined as the use of inductive reasoning (observations, classification, inference formation, testing inferences, controlling variables, etc.) and deductive reasoning (constructing and analyzing valid hypothetical and categorical syllogisms, finding hidden assumptions, etc.)

The teacher education faculty strive to utilize the thinking processes fostered/developed in the core liberal arts courses and the three semester science methods sequence in required education courses by giving students

opportunities for problem solving, decision making, and application. Furthermore, an evaluation tool is being designed to measure the operationalization of the ideal and modification of courses will continue to arrive at this ideal.

To allow the necessary instructional clock hours to make these changes, much has been done to integrate and synthesize the course work. The basic vehicle in this restructuring has been an integrated syllabi which has resulted in master set of over 900 student expected outcomes arranged in a matrix reflecting the total program and its strands and courses.

This effort is a marked departure from the original College of Saint Teresa Dean's Grant application, and has significant implications in training teachers for their responsibilities under present special education legislation. It, also, generalizes to the better teaching of all children.

Three sets of factors have influenced the direction of the Dean's Grant: project experiences, the authors' previous work experiences and bias, and empirical findings. The three factors interact in a pattern that seems to defy any easy flow diagramming so they will be reported in three separate sections. They will be followed by a section on the project's implications.

Project Experiences

By the end of the College of Saint Teresa's Dean's Grant's first year the faculty mutually shared three realizations. One, there were many close parallels between regular and special education. Two, the teacher training program had a fair degree of content duplication. Three, there was a similarity between solving children's academic and social problems and the

processes learned in the three semester science sequence. (The college had received an AACTE Excellence in Teacher Education Award in 1975 for the three semester science sequence -- Unified Science). This last commonly shared insight came as the result of an hour segment in a faculty seminar. These realizations were the impetus for faculty summer efforts in redesigning courses to eliminate duplication and adding some P.L. 94-142 content.

The first year of the project is described at more length in a National Support System Project distributed paper (Schenkat, 1980a). As part of the Dean's Grant's second year, the first author taught the junior level Social Studies and Language Arts class and attempted to relate the process skills from Unified Science with the course content. Although this strategy was less than successful, faculty discussions regarding it re-kindled interest in the utility of the process skills and faculty seminars over a four month span centered on their use.

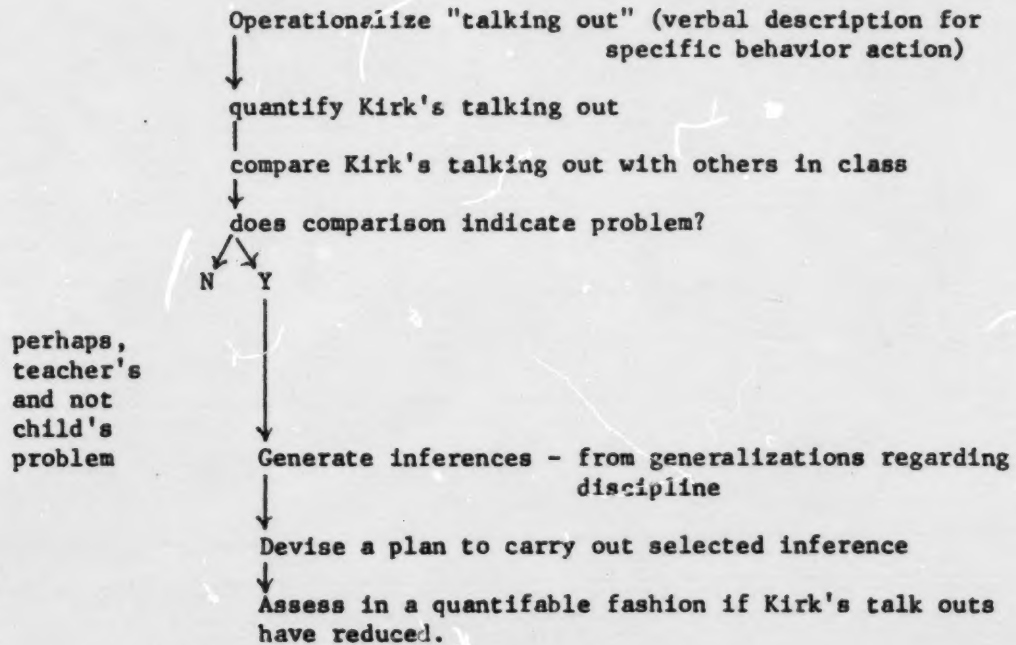
The first set of sessions focused on the parallels of the Scientific Method, IEP Development, and the Rational Means End Planning Model (commonly taught in regular education). These relationships are seen in Table 1. At this time, the process skills were limited in scope to those processes listed in a Scientific Approach column of Table 1.

Table 1
Relation of a Scientific Approach,
IEP Development, and Rational Means End Model

Scientific Approach	IEP Development	Rational Means End Model
Observations	Assessments	Informational Processes
Classification		
Inferences	Recommendations	
Design Experiment		
State Hypothesis	Behavioral Objectives/ Activity	Select Learning Activity
Operationally Define	Behavioral Objectives	Specify Objectives
Control Variables	Specific Activity	
Experiment	Implement	Teach
Measure		
Record/Communicate	Evaluate	Specify Evaluation Procedures
Predict	IEP Dates	Completion date for Units

A concrete example of the similarity between the processes involved in problem solving for IEP development and doing Unified Science can be seen in the descriptive comparison between solving Kirk's problem and the Analysis of Mixtures mod (the three semester sequence has teacher education majors complete eighty mods in addition to clinical experiences in teaching science).

Problem: Kirk is a six year old in first grade who has the habit of talking out during class about things not related to a lesson. Describe a remedy. A flow diagram is presented as a possible solution to Kirk's problem on the following page.



In a similar fashion the Unified Science Mod, Analysis of Mixtures, presents a problem.

Problem: The student is given five powders labeled A, B, C, D, E and is asked to classify the powders on observational properties. Then the student is given a mixture of two or more of the five powders and asked to determine which powders are contained in the mixture.

A comparison of the steps taken in Kirk's problem resolution and solving Analysis of Mixtures is seen in Table 2 and reveals a high degree of similarity in the use of processes.

Table 2
Comparison of Processes for Problem Resolution

Kirk's Solution	Analysis of Mixtures
Operationalize talking out and quantify Kirk's talking out	Operationalizing the definitions of powders A, B, C, D, E is done
Compare Kirk's talking out	Observing and classifying powders on a hierarchy chart is completed
Does comparison indicate problem?	Sorting is conducted whereby the mystery powders mixture properties are compared to the operational definitions of powders A, B, C, D, E and a decision on commonality is made
Generate inferences	Inferencing regarding certain powders in the mixture is done
Devise a plan	Testing inferences involving the use of other process skills such as controlling variables interpreting data, and predicting is completed
Assess in quantifiable fashion	Interpreting the data and concluding from further tests whether or not the inferred answer is correct

The relationships seen in Tables 1 and 2 are further described in:

The Unthinkable Things We Do To Help Handicapped Kids (available from the Project), Special Education As A Great Experiment (Schenkat & Battaglini, 1980) and Do We Really Need To Create a Mystique Around Mainstreaming? (Schenkat, in press).

The second set of seminars was stimulated by a faculty discussion paper - Blooming Freshmen (available from the Project) - which suggested that all Freshmen should learn Bloom's Taxonomy (Cognitive Domain) as a vehicle to synthesize college academic experiences. These seminars considered the relationship between the process skills and general education

expected outcomes in critical thinking: do analytical reasoning (deductive, inductive), engage in reflection, synthesize a point of view-formulating arguments to support it, evaluate and choose among alternative courses of action, and apply knowledge to actual problems. (This list comes from the College of Saint Teresa's Desirable Characteristics of a Liberally Educated Person.)

The seminars lead to a faculty appreciation of the broader definition of reasoning skills including both deductive and inductive thinking as described in the paper's introduction and in the generalized value of the liberal arts core in teacher preparation. In addition, the seminars precipitated a faculty commitment for a one week joint summer study session to review process skills and consider their application in teacher education. The second author who is mainly responsible for science methods not only designed several procedures to instruct the faculty in the use of process skills for inductive problem solving, he further related deductive reasoning to: the stereotyping that often could be done as a result of knowledge of handicapping conditions, hidden assumptions teachers can make, and invalid syllogisms that could guide teacher actions. (It is of interest to note that the science methods faculty member also directs the Freshmen Studies Project at the College of Saint Teresa.)

That particular week has undoubtedly been the high water mark of the PRISE effort to date in terms of enthusiasm generated and also solidification of the central goal of preparing teachers in a thinking approach. Faculty again spent time over the summer months in redesigning courses as a result of new insights into the utility of the process skills.

The project has stimulated much work on curriculum development as a result of the first year which focused on curriculum duplication and PL 94-142 additions, and the second year which had a process skill emphasis. However, by the end of the second year very little formal evaluation had been done. The project, in the final year, has made a strong commitment to evaluation. It has been relatively easy to generate a knowledge test for seniors who have been exposed to PRISE for two years. This in fact is necessary to ascertain their competence in meeting surrounding state licensure requirements.

The project which has invested so heavily in the process skills has felt bound also to demonstrate their efficacy. Hence since mid October, faculty meetings and team projects have focused on this process evaluation.

The first effort centered on problem solving vignettes, similar to Kirk's, which sought to tap a student's ability to ask the right questions and think in a logical way to solve hard to teach children's problems. Although ultimately it would be desired to use this type of format for both student practice activities and some form of assessment, because of a lack of time to develop written simulations to the degree of sophistication suggested by Mc Guire (1975), a decision to look at process skills in another fashion was taken.

The college has used the Watson Glaser Critical Thinking Test (1964) as an evaluation devise for the liberal studies program hence the science methods professor was familiar with the tool. Upon considering the nature of mildly handicapped students' learning and behavior problems and more specifically the steps a teacher would use to solve them, many of the

sections of the Watson-Glaser (Inferencing, Hidden Assumptions, Deductive Reasoning, Interpretation, and Evaluation) seemed to be critical dimensions in potential problem resolution.

The following types of education situations seem to need process skills in their solution:

- Teachers are called upon to judge the probability of truth of an inference. "John is emotionally disturbed." "John is spoiled at home."
- Teachers need to be able to detect hidden assumptions that they and/or their peers use in making decisions about children. "If I am consistent with my discipline, I can stop the other children from teasing John and his crying will decrease".
- Teachers' use of informal assessment depends upon skills of gathering observations, generating inferences, and testing rival inferences.
- Teachers need an ability to judge if conclusion are valid. "If I see learning disabled characteristics of A, B, C in a child, then he is a learning disabled student. I don't see these characteristics in John, therefore, he is not a learning disabled child."
- Teachers need another aspect of deductive thinking in the ability to use categorical syllogisms appropriately. "All mentally retarded children are concrete thinkers. John is mentally retarded. Therefore John is a concrete thinker." The validity of the major premise must be considered. If it can not be stated in the all form (which few exceptional characteristics can) extreme caution is necessary in the use of the conclusion.

Currently an assessment with the following subsections is being field tested with students:

I. Reliability

- a. Interpreting Reliability
- b. Inference
- c. Testing Inferences
- d. Generating and Testing Valid Inferences

II. Validity

- a. Deduction
- b. Hidden Assumptions

III. Synthesis - Generating Hypotheses and Drawing Conclusions

The Dean's Grant's experiences which early on prompted an awareness of the relationship between the scientific method and teaching methods (both regular and special education) has been considerably expanded into a dependence on the process skills facilitated in liberal education courses as one of the primary elements in allowing for the regular teacher's success with the mildly handicapped student.

The Authors' Previous Work Experiences and Bias

The Perspective of a Special Educator

I have a unique background that has contributed in some ways to the direction charted by our faculty team. My entry to education was as a school psychologist. I next proceeded to the positions of learning disabilities teacher and special education administrator. Finally under the auspices of our Dean's Grant, I learned about elementary and secondary education. A bachelor's degree in Business Administration underlies this education training. This reversal background from a specialist to a generalist has offered a perspective of value in the project.

As a learning disabilities teacher, I realized that most of what I dutifully performed as a school psychologist was irrelevant to remediation of handicapped children. Specifically, I am referring to the use of: IQ tests, standard academic assessment, and the types of testing which focus memory and perceptual skills. Much of this could be labeled as studying the characteristics of mildly handicapped children.

I reached this conclusion after reflecting on what aspects in my teaching performance insured I was successful with my students. It was basically a good knowledge of curriculum sequencing and the use of Bateman's (1971) Essentials of Teaching (Objectives, Task Analysis, Teach

Materials & Management, Evaluation, and Recycle - if necessary: her mnemonic OTTER captures the essentials).

As a special education administrator, I had the task of reexamining learning disabled students' records to determine from that collection of failing children which were not truly learning disabled. This was necessary because the school district has exceeded its quota in learning disabilities according to state department funding levels. When we do not know the truth about learning disabilities but do know the consequences of academic failure the necessity of that type of administrative decision making is abhorrent to me (I left the job after five months).

A further dilemma existed. I hated to deny any child extra services that could avert school failure, but I also believed that OTTER was so fundamentally simple that even regular teachers without a great deal of specialized training should be able to apply it. I was not popular in the building where I worked as a learning disabilities teacher when I suggested that the vast majority of children I served were instructional casualties and not "exceptional" children.

I entered teacher training with a hope of infusing the OTTER cycle and an attitude about all children's learning into a woefully inadequate regular education training. (Schenk, 1980b). This false and superior bias resulted in part from the informal training I had experienced in my preparation and work settings.

The tenor of the original Dean's Grant application reflected some of my experiences. For instance the project set student expected outcome goals listed below that were closely parallel to the OTTER cycle.

- A. Trainee will carry out suitable procedures for assessment of a child's reading, spelling, oral or written language, and mathematics difficulties in relation to child's current classroom curriculum and/or a child's social behavior which is recognized as a school related problem.
- B. Trainee will specify in behavioral terms, with appropriate criterion, instructional objectives which are appropriate to the skills needed by the handicapped child.
- C. The trainee will evaluate systems (curriculum analysis), style of instruction (reinforcement, pacing prompting, etc.) and learning conditions to determine effective interventions for the child.
- D. Given a behavioral objective, the trainee will set out a series of enabling objectives by the use of task analysis for the student to reach the objective.
- E. The trainee will generate teaching learning procedures for the solution of academic, study, and social behavior problems.
- F. The student will assess instructional outcomes in terms of pupil behavior change and use this data in the formulation of ongoing instructional plan adjustment.
- G. The trainee will set up and maintain conditions and procedures of instruction suitable to obtain the learning and behavior objectives set for the child.
- H. The trainee will explain to others working with the child the goals and essential characteristics of the teaching approach used with the individual child so all persons working with the child can articulate their efforts. This includes particular emphasis on communication with parents.
- I. The trainee will learn of the roles and function of special education support staff and be aware of when data suggests consulting or other support is needed to best serve the needs of the student.
- J. The trainee will actively support the cause of least restrictive placement in the regular classroom.

(Student expected outcomes were adapted from the University of Illinois Special Education Department's Specialized Instruction Program, 1976).

As a result of student expected outcomes, faculty orientation and workshops focused more on teachers being able to utilize a systematic approach to instruction in meeting the needs of the mainstreamed child. Hence little time was spent on the extensive content that faculty can learn about exceptional education characteristics. If one goes back and compares the student expected outcomes to the Rational Means End Planning Model described earlier, it was no surprise that the faculty did not see much new in my week's presentation of "systematic special education."

In trying to resolve this dilemma - what's all this "mainstreaming training need nonsense" about if regular education and special education skills are not that different? - the belief in the use of the process skills was a very understandable transition from my previously unshakable belief in OTTER.

At a preservice level, I have supervised both elementary teachers and master's level emotional disturbance and learning disabilities teachers. Although I could convey to them skill sequences and the elements of the OTTER CYCLE, having them operationalized this in clinical settings was another matter. I concur with Morsink's (1980) observation of a repertoire of methodology deficit which relates to "what can I do if/when... and how do I know if it is working what else can I try if that doesn't work?" (She has described several process skills in her phrasing.).

This lack of a leap from theory to practice was further evident in inservice work. Teachers are often desirous of being told what to do without seeking to understand the parameters that dictate success.

When we summed up the quantity of content conveyed to our teacher education graduates (the matrix of the integrated syllabi has allowed this) it seems there are great amounts of learning that should be applicable to teaching all students. Learning about teacher education in a backward fashion from specialist to generalist gives me a good deal of confidence in making this assertion. In carefully studying our knowledge level offerings, I believe what teachers in training need is better ways of tying together all they have learned and many appropriate experiences in using it in a decision making fashion.

The notion of decision making brings us back to the use of process skills. When I indicated that students did not make automatic transfers from all that knowledge and a three semester sequence of science methods to being prime solvers of students' problems, I think we get at the essence of the difficulty in preparing a teacher. If teachers possess the process skills, we probably see the naturals. But it is not likely that we will see the naturals because of the functioning of K-12 schools according to Robert I. Reynolds. (1968) He states,

The majority of students entering a program in teacher education are the products of a system which, in practice, defines education as the accumulation of subject matter content ... unless teacher candidates comprehend education as a process, further preparation in the 'methods' of teaching is futile.

The task of preparing the type of teacher needed today becomes one of synthesising a program which links not only teacher education elements but also the liberal education component.

In summary, the OTTER cycle is a process closely akin to the scientific method. It takes much effort and practice for most students to utilize the knowledge base of their training in the problem solving manner advocated. If this can be accomplished the teacher has the necessary foundation in meeting the needs of the handicapped learner.

Perspective of a Science Educator

My entry to public schools came as a science teacher at the secondary level. I taught for six years in an inner city school. Upon reflection I had qualms of doubt as to my effectiveness in instilling in my students the appreciation of science that had been a factor in my becoming a science educator.

At the time I entered graduate school, the process approach to science education was in vogue. After overcoming an initial skepticism of the feasibility of teaching science this way in a large city school (there is often a realistic fear of student's malevolent use of equipment and apparatus) and becoming comfortable with giving up "the lecture," I became an enthusiastic convert of the process approach to science.

This enthusiasm was channeled into an ideal task at the College of Saint Teresa where I was hired to help develop a curriculum for undergraduates in teacher education which would prepare them to teach science in the process format (National Science Foundation, 1975). We struggled in evolving the curriculum which was to model a form of learning that elementary school children engage in. This was crucial as we felt too often the process approach had failed because teachers had become trained in didactic ways to teach the programs (Battaglini, PirkI and Horner, 1975)

The staff of the science education project at the college were pleased with their efforts to educate science educators and had gathered evidence to demonstrate the project's efficacy. In retrospect, the type of evidence which was reported by the external evaluator (Renner, 1975) was the impetus for a generalization beyond science education. Renner's dependent variables were tests based on Piagetian Cognitive Psychology. I began to ponder if our process approach might have utility beyond science education.

The summer of 1978 was a busy time as I participated in the first PRISE workshop and directed the Freshmen Studies component of the College's Liberal Studies Program. The latter is currently under funding by the Northwest Area Foundation.

As I thought about OTTER from the PRISE Workshop and saw so many elements of a rational scientific approach to solving learning problems, I began to initiate discussions about the similarities I saw. I had never previously thought about handicapped education. In the rush of the summer workshop this was lost but returned as the first author had a chance to see how process was learned while he was doing course audits in Unified Science.

In the first week Liberal Studies' Program, 30 faculty at the College of Saint Teresa had the charge to evolve cognitive liberal education goals. The diversity of background, even in a small college, makes this an extremely challenging task. Although the language was different, I came to see a thread of similarity in what this diverse body was suggesting. It bore a relationship to the process skills taught in Unified Science.

This observation came to a level of practical implementation when during the second week of the session the large group split, and my group's task was to formulate outcomes and strategies for the Freshman Seminar. Again dissonance prevailed for two days as consensus seemed to be elusive. A reoccurring theme was, however, surfacing - students should experience some of the process skills and these skills should be used as a common core to build course work aimed at developing critical thinking.

I carefully weighed the risk of offering the model of science education we had developed. It seemed so appropriate as I listened to the variety of goals and strategies but I also respected the liberal arts faculty and did not want to appear presumptuous to my peers. I made the suggestion and several faculty agreed to try the method. We now have a close link between liberal arts preparation, the science methods courses, and the goals of handicapped education.

Empirical Findings

There is a persistent belief that a body of knowledge is necessary if teachers are to be professionals. Greenwood, Good and Siegel (1971) have stated it well:

Our bias is to refer to the system of generalizations that actually governs the teacher's behavior as his theory. It is our belief that if teachers clarify and systematize their beliefs they will become more adept in interpreting classroom behavior and more capable of devising strategies. p. 2.

Although in the ideal it is speculated that teachers operate from a system of generalizations, this belief has been difficult to establish

empirically. Duffy and Metheny (1979) surveyed 350 teachers to determine reading methodology preferences. The study found only a small percentage of the teachers surveyed demonstrating any consistent belief about reading. Furthermore, of that small percentage, only a few demonstrated any use of the beliefs in practice. Their finding was consistent with a College of Saint Teresa study prompted by a desire to know how students synthesize the myriad of information given them and how they react to discordant information (Preliminary Results: Reading Content Integration Study and Assertion Inventory - available from the Project).

Further empirical findings exist that suggest teachers are not linking their knowledge or theories and their courses of actions when instructing children.

Some special education practices do not reflect process skills. In a study of 300 IEPs for mildly handicapped children in 37 Connecticut school districts, Schenck and Levy (1979) found:

a lack of a relationship between the psychological assessments and the long term goals/short term instructional objectives that highlights the lack of existence of specifically designed instruction. The inability to trace goals and objectives back to diagnostic data raises serious doubts concerning the efficacy of current educational plans. p. 17.

In terms of process skills, hypotheses were being formulated without the use of observations in the Schenck and Levy findings.

Clark and Yinger (1979) describe some regular education practices which indicate a confusion of dependent and independent variables. They state:

on the topic of teacher planning, the available literature suggests that teachers do not seem to follow the 'rational' model that is often prescribed in teacher training and curriculum planning. In particular, the teachers' studies neither began nor guided their planning in relation to clearly specified objectives or goals. Rather, teacher planning seems to begin with the content to be taught and considerations about the setting in which the teaching will take place. p. 11.

One could argue against the Rational Means End Model, but for handicapped students it is only an academic argument, as it is inexplicably woven into the law via the IEP process.

This brief review does not purport to be a summation of the literature on teacher thinking. These studies, along with an extensive body of research done at Michigan State University, however, seem to offer some insights into the outcomes of teaching often observed in schools. What seems to be lacking is the operational use of process skills.

Project's Implications

It is important from a faculty standpoint for each member to have the knowledge of the total program. This allows the professor a way to see how his/her niche is depended upon by other faculty in the successful preparation of a teacher. From a student standpoint, it is also necessary to see a synthesized program. It is not an easy leap from the knowledge base to appropriate practice. By way of example, although perhaps the mnemonic OTTER has been overused, it has represented a synthesis that has been helpful to the first author. The mnemonic gave him a framework that guided much of his decision making as a teacher and is still being used. For instance, OTTER is useful in evaluating the various drafts generated by the Minnesota Board of Teaching in their deliberation on training content in licensure for regular and special education teachers.

This project's principal focus has been in teachers meeting the needs of handicapped children. This challenge has been met in many places by adding Primers on Mainstreaming in a variety of fashions. PRISE asserts that there is not a great quantity of material to add if there is adherence to some of the basic charges in teacher education. A sensitivity to individual differences should have been the outcome of both a liberal education and a result of human relation mandates (Minnesota's requirement is a decade old). A positive attitude about all children succeeding is important, but it has a hollow ring unless teachers have the skills to make it happen. A systematic approach and good curriculum instruction (again, a contention from the past) has the highest probability of meeting students' learning needs. A synthesized program (not content add-ons) is probably the best assurance that the needs of handicapped children will be met.

Evaluation

The evaluation tool described in the paper's first section operationalizes the goals of the project. When one thinks of trying to demonstrate the effect of a Dean's Grant, this evaluation instrument comes much closer to the ideal than asking students how they feel about serving handicapped children in a series of questions calling for Likert Scale responses as is the common practice to date.

If process skills are validated as essential elements for teachers, one must first question if they can be taught. If so, there are a number of program considerations. Foremost among these considerations is the ability of the general education program to insure students acquire the process skills. If process skills can not be taught but are essential,

what obligation does a department of education have to screen applicants on them?

Structural Problems in Meeting Teacher Training Challenges

The College of Saint Teresa gained national recognition for its science education model six years ago. Yet at a school of such a small size, the spin-off from this model did not cross the street from the science building into the education department for several years. It is submitted that local resources at most institutions go untapped.

The idea of science process skills were clearly demonstrated at a faculty meeting in February of 1979. Perhaps this one presentation should have been enough, that is the way students at preservice or inservice level are expected to learn. However, for this level of functioning the faculty has achieved many cooperative hours have been necessary. Generally, college and university administrators do not recognize the amount of hours needed to obtain quality programming in teacher education. In fact much of the PRISE progress has come as a result of grant bought summer time. No matter how committed faculty are there are many current limits to academic year progress.

Perhaps teacher training programs under current structures will never be able to accomplish sweeping improvements. B.O. Smith (1980) suggested that current funding dictates an academic rather than clinical form of pedagogy. Attendent with this observation is: lecture rather than clinical instruction, student evaluation on normative rather than absolute standards,

emphasis on faculty research rather than teaching and supervision, and eclectic curriculum based on faculty specialization rather than professional training emphases.

Linkage with Liberal Arts and Public Schools

The authors' suggest that it is necessary to integrate teacher education and the reasoning portions of a liberal arts education as a step in meeting the ultimate Dean's Grant challenge of making a difference for school aged handicapped learners. It is important to question, however, if improved teacher education at a preservice level can alone make the ultimate difference in the Dean's Grant challenge.

It appears the public has bought the notion that failure in public schools results because of poorly trained teachers (Time, 1980). What seems to be the public's dismay with teachers today, however, are the missing elements of an education that at the minimum a good high school should convey. This should not have to be rectified by a college of education.

Furthermore, there seem to be more salient reasons why schools fail. These relate to organizational design factors. The extensive Rand studies (McLaughlin, 1978) on effective public school educational innovations assert there is little hope of sustained educational innovation or change unless whole building faculties acquire new skills to eliminate the problems.

The B.O. Smith Model calls for more team work in teacher education. Public school teachers need also to work as problem solving teams and not as autonomous entities in a closed door classroom.

The challenge to teacher education then goes beyond "new hires" and calls for a collaboration with local school districts to modify existing practices. This takes another modification which places a university value on community service.

Summary

It is important for teachers to learn course content. Perhaps as the proliferation of content continues, more should be done to see which generalizations in the body of knowledge are important when students confront school problems.

Teacher education content is certainly a necessary condition for effective teaching. It is hoped that the three sections of this paper have also made a case for process skills being a necessary condition for effective teaching and that neither content nor process alone are sufficient conditions. It is asserted while it is relatively easy to make improvements in our capacity to transmit content in teacher education, process skills involve a much greater inter-college and intra-college cooperation. It is further asserted that without this cooperation the type of teachers needed to meet the challenge of PL 94-142 will not be produced.

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